

Standard Operating Procedure for Precipitation Sampling Using XAD-2 and MIC Collectors

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1.0 Overview

This SOP is intended to provide a step by step procedure for collecting and replacing an XAD-2 column in an MIC-B sampler.

The data collected from analyses of XAD-2 columns from the MIC (Meteorological Instruments of Canada) samplers will be used primarily for the Lake Michigan Loading Study (LMLS) and the Integrated Atmospheric Deposition Network (IADN) programs. Samples at the Sleeping Bear Dunes site, which is part of the Integrated Atmospheric Deposition Network, were sampled and analyzed by Indiana University. The sampling method is identical apart from a few minor differences in QC samples. This site represents 10 % of the samples for this method. The objectives of the programs are to determine the loadings of persistent toxic contaminants from the atmosphere to the Great Lakes from both urban and regional sources. Sampling sites have been strategically located around the Great Lakes basin to provide these estimates.

The MIC sampler is used for the collection of toxic organic compounds (PCBs, pesticides, and PAHs) in precipitation. Specific analytes of interest that will be collected from this sampler are listed in Table 1. The sampler operates continuously for four weeks. This interval is used because of the need to collect at least 5 L of precipitation (equivalent to about 1 inch of rainfall) in order to get a reliable measurement of the target chemicals. Because of the low concentrations of target compounds, the operator must follow this protocol carefully to insure sample integrity.

The sample will be collected by passing the precipitation through a column containing a 10 cm bed of XAD-2 resin. The column is prepared at the Illinois State Water Survey (ISWS), shipped to the site for exposure to the precipitation, and returned to ISWS for extraction and analysis of the chemicals listed in Table 1. These methods are documented in laboratory SOPs.

The following procedure is used by the field operator to maintain the MIC sampler, and to remove and replace XAD-2 columns in a manner that will improve sampler integrity. Although a sample will be collected every four weeks, the collector must be checked each week to ensure proper operation and to empty the overflow container if necessary. Any questions on the sampling methods or operation of equipment should be directed to the following individuals. The Principal Investigator will be responsible for informing the Project Lead at U.S.EPA of changes in this procedure and any problems that develop.

Table 1. Analytes Analyzed from XAD-2 Column

Parameter	Specific
PCB Congeners	To be determined
Chlorinated Pesticides	a-HCH g-HCH p,p' DDT and metabolites HCB Dieldrin Alpha-chlordane Gamma-chlordane Trans-nonachlor Atrazine
PAHs	acenaphthalene acenaphthene fluorene phenanthrene anthracene fluoranthene pyrene chrysene benzo(a)anthrene benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(123cd)pyrene dibenzo(a,h)anthracene benzo(ghi)perylene retene coronene benzo(e)pyrene

Sampling Protocol and General Operations

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2.0 Summary of Method

Site operators will visit the site weekly to check for proper functioning of equipment and to ensure that the overflow container is less than $\frac{3}{4}$ full. Samples will be collected on the prescribed day at, or as close to 10:00 a.m. local time as practical. If it is raining or snowing, or hazardous conditions prevail, samples may be collected later in the day at the discretion of the site operator. If the sample can not be collected on the prescribed sampling day, the Principal Investigator must be notified. The following sampling activities will take place in the order listed.

- 1) Initial equipment inspection.
- 2) Check overflow container; measurement of precipitation volume if necessary.
- 3) Rinsing and cleaning of the precipitation collection surface with deionized (DI) water (from ISWS).
- 4) XAD column removal and labeling.
- 5) Packaging XAD column and sample report form for shipment.
- 6) Cleaning collection surface with methanol (supplied by ISWS).
- 7) Installation of a new column and setting flow rate.
- 8) Waste disposal and clean up.
- 9) Sample shipment.

Steps 1 and 2 will be conducted weekly; Steps 1 through 7 will be conducted when an XAD-2 column is changed (every four weeks). Each of these steps will be detailed in the following sections.

3.0 Sample Handling and Preservation

Due to the expense of sampling and analyzing the XAD-2 columns, a limited number of sites have been selected in order to achieve the goals of this study. Therefore, every sample is important and represents a significant portion of that site's yearly estimate. Any contamination through mishandling or lack of preservation could cause a bias in the program estimates. The XAD-2

column should remain moist with the water level between the top of the resin bed and the top of the column. If the column is broken or dry on arrival, contact the Principal Investigator immediately. If the column dries out during the sampling period, DI water should be added. This must be noted in the site log and on the sample sheet. Before removal, DI water will be added to the column.

Once in place, the column should be wrapped tightly in aluminum foil to exclude light and should remain wrapped for removal and shipment. Follow all procedures for sample removal, packaging and shipment.

4.0 Interferences

Due to the nature of the chemicals being collected, all precautions should be take to avoid contamination of the sample and sampler during weekly visits and sample collection. The sampler functions to collect *precipitation samples*. Therefore, the sample collection surface and

the XAD column should not be exposed more than is necessary. This will minimize contamination from dry deposition of atmospheric particles. The sampler should be inspected weekly to verify that the sealing pad is mating properly with the top of the sampler. The XAD columns should be plugged at both ends and sealed in a plastic bag as soon as they are removed from the sampler.

Exposure of the XAD column to light can cause the degradation of some of the PAHs. Once installed, the XAD column must remain wrapped in aluminum foil.

Heaters and fans are included in the sampler to avoid temperature extremes that might damage the columns or degrade the samples. Proper maintenance of the heating unit is required, and it should be checked weekly when temperatures below freezing are possible (see Section 6.2).

5.0 Safety

In any field operation, emphasis must be place on safety. Site operators must be aware of the potential safety hazards to which they are subjected. Follow all safety protocols and equipment guidelines, and be prepared for emergency situations. The site operator is responsible for his/her safety from potential hazards including but not limited to:

- | | |
|---------------|---|
| Travel: | When traveling to the site be sure to check on road conditions and weather advisories. Carry emergency supplies (warm clothing, food, water) when traveling in the winter. Always let someone know where you're going and when you expect to be back. Always carry a first aid kit. |
| Electrical: | For obvious problems (fire, scorching, blown fuses), turn off the power for the circuit involved and notify ISWS. Unplug the sampler before replacing fuses and circuit boards. Do not attempt other electrical repairs. Be especially cautious if conditions are wet. |
| Insect pests: | If you are allergic to insect stings, you should carry a kit prescribed by a physician. Be especially cautious if nests or large numbers of stinging insects are present. Notify ISWS of all problems. |

Samp. Proc.: Never force glassware with unprotected hands. If the column arrives broken, return it to ISWS. Do not attempt to remove the Teflon plugs.

Chemicals: Methanol is toxic and should not be ingested, inhaled, or come into contact with bare skin.

6.0 Equipment and Supplies

Careful use, proper maintenance and cleaning extends the life of serviceable field equipment. Permission should be obtained from the Principal Investigator to use anything other than the equipment and supplies mentioned in these lists (supplied by ISWS).

6.1 Serviceable Equipment

These items will stay at the site at all times.

- MIC Sampler (frame, motor, rain sensor, fan assembly)
- Overflow tubing, funnel, and overflow container (25 L plastic carboy)
- Space heater
- Maximum/minimum thermometer
- Graduated cylinders (2 L and 10 mL)
- Precleaned Pyrex beaker (2 L)
- Forceps
- Teflon wash bottles (DI water and methanol)
- Standard wash bottle (tap water)
- Plastic bucket
- Spare o-rings
- Plastic bags
- Teflon column outlet valve
- Latex gloves
- Log book
- Report forms
- Sample labels and marker
- Kleen Guard coveralls
- Kimwipes

A diagram of the MIC sampler and XAD column assembly is shown in Figure 1. General maintenance and trouble shooting are covered in Section 9.0.

6.2 Consumable Equipment

These items will be shipped to the site operator every 4 weeks.

- XAD columns and Teflon plugs
- Glass fiber filter pieces
- Sample jar
- Test tube brush

- Shipping box and packaging materials
- Freezer packs (summer only)

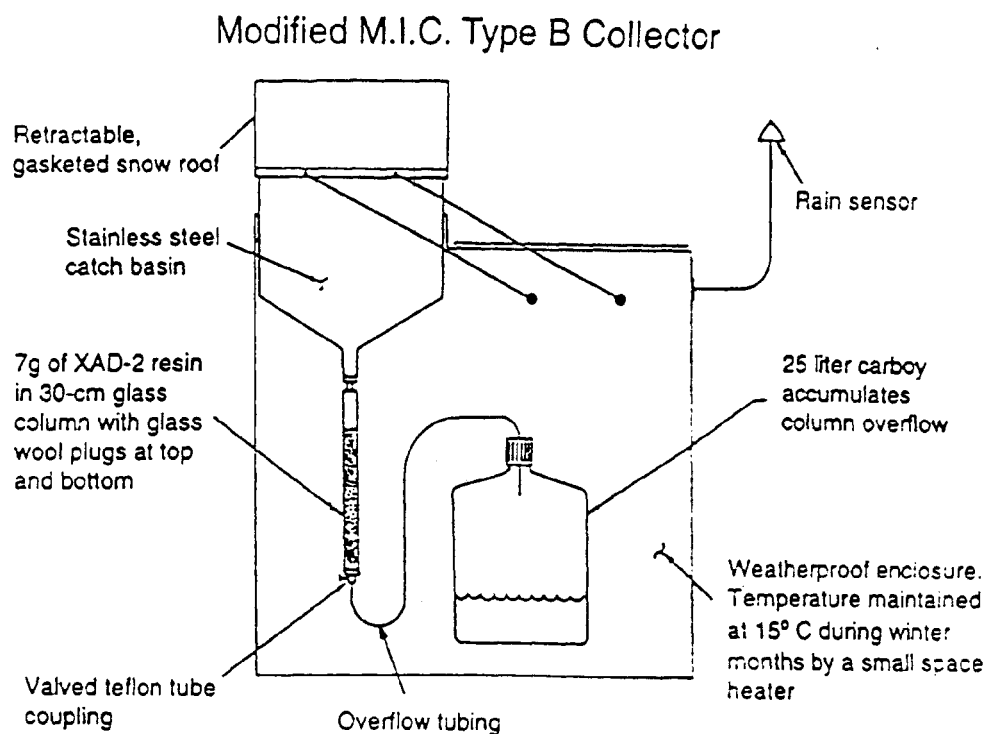


Figure 1. Schematic of the MIC Precipitation Collector

7.0 Calibration and Standardization

7.1 Rain sensor

Each week check the operation of the MIC sampler. If it is dry, wet the sensor with DI water; the cover should open immediately and close within five minutes if no additional wetting occurs. Clean any accumulated dirt off the sensor. Do not allow the sampler to remain open any longer than necessary. See Section 9.0 for more information.

7.2 Heater and Fan

The heater must operate properly in freezing temperatures to maintain proper operation of sampling equipment. The heater should maintain a $5^{\circ} \pm 10^{\circ}\text{C}$ temperature in the sampling enclosure. The heater will be calibrated at ISWS. When cold weather is expected, check that the heater is operational by turning up the heater thermostat until the heater comes on; set this thermostat at the calibration mark. During warm weather, make sure that the fan is operational by turning down the fan thermostat; set this thermostat at the calibration mark. Reset the maximum/minimum thermometer and record the temperatures each week.

8.0 Procedures

The following procedures will be discussed:

- 1) Initial equipment inspection
- 2) Measurement of precipitation volume in overflow containers
- 3) Rinsing precipitation collection surface
- 4) XAD column removal and labeling
- 5) XAD column packaging for shipment
- 6) Cleaning collector surface and funnel outlet
- 7) Installation of new column
- 8) Waste disposal/clean-up
- 9) Sample shipment

Steps 1 will be conducted weekly, Step 2 will be conducted as necessary, Steps 1 through 7 will all be conducted every four weeks when the column is changed.

8.1 Initial Inspection

Upon arrival at the site, make an initial inspection of the equipment to determine proper operation for the week. This inspection will be entered on the Weekly Site Visit Sheet and will include:

- 1) General comments. Comments that might affect the sample collection that week, i.e., fire in the area, wind storms, abnormal precipitation, vandalism, etc. If it is raining or snowing during the visit, note whether the sampler is open. If there is standing water in the funnel see Section 8.2 or if the column has gone dry.

- 2) Equipment evaluation. Note any damage to equipment. Check operation of the rain sensor if it's not raining (Section 6.1) and the heater or fan (Section 6.2). Check for interferences (Section 3.0). Check the Teflon sealing pad on the cover of the MIC. If it is loose, cracked, or holding water notify ISWS.
- 3) Record minimum/maximum temperature and reset thermometer.

8.2 Measurement of Precipitation Volume

This procedure will be done on a weekly basis if the overflow container is more than $\frac{3}{4}$ full. It will always be done when changing an XAD column. If possible do not perform this step during a precipitation event, since this will affect the volume estimate.

If this step has to be done during an event, immediately replace the overflow container with the plastic bucket; and record the amount of precipitation that passes through the column while the water in the full container is being measured. Measure the volume in 1 L increments using the large graduated cylinder. All measurements should be recorded in the Weekly Site Visit and Sample Data Sheets.

If there is standing water in the collection funnel, check that water is flowing through the column. If water is not flowing or flowing very slowly, close the valve on the column and remove it from the funnel catching the precipitation in the pre-cleaned beaker. Check for debris blocking the funnel outlet or the column outlet valve. Use the cleaning wire if necessary. Reconnect the column, adjust the flow (Section 8.8), and allow the water collected in the beaker to pass through the column. Return the beaker to ISWS for recleaning. If flow can not be restored, notify the Principal Investigator.

If the column has gone dry, add DI water from the Teflon wash bottle and try to determine where the leak is. Replace o-rings or tighten fittings as necessary. Note this and the approximate volume of DI water added on both the Weekly Site Visit Sheet and the Sample Data Sheet.

8.3 Rinsing the Precipitation Collection Surface

This procedure is carried out only during XAD column removal and replacement (every four weeks). If possible, do not perform this step during a precipitation event. Wait until all precipitation has drained from the collection funnel. Wear latex gloves at all times. If the system is plugged, see Section 8.2.

If the sample must be collected during a rain event, wear Kleen Guard coveralls making sure that all clothing extending over the collection surface is covered. If practicable, stand downwind of the instrument. Do not lean over the collecting surface.

- 1) Squirt DI water onto the rain sensor to open the sampler. Turn off the switch on the front of the sampler so that it remains open during the procedure.
- 2) Wearing latex gloves (and tyvek jacket if necessary), remove any obvious debris (bird droppings, leaves, etc.) from the collection funnel. The presence of debris should be noted on the Data Sheet.

- 3) Rinse the collection surface with about 200 mL of DI water (one wash bottle full) while wiping with the piece of precleaned glass fiber filter sent with the monthly supplies. This step removes adhering particles from the collection surface. Allow rinsings to pass through the column until the water level is halfway between the top of the resin bed and the top of the column (see Figure 1). If the temperature is so cold that water freezes on contact with the funnel, simply wipe of the collection surface with a dry piece of filter and go to Step 4.
- 4) Turn off the column outlet valve to maintain the water level in the column.
- 5) Seal the filter used to clean the collection surface in the glass jar.
- 6) Be sure to turn the power switch on the front of the sampler back on. Proceed to Section 8.4.

8.4 Column Removal and Labeling

The aluminum foil should remain on the column.

- 1) Unscrew the XAD column from the fitting at the base of the collection funnel. Cap the column with a Teflon plug. Make sure the black o-ring is in place.
- 2) Remove the overflow tube while turning the column upside down. Remove the outlet valve fitting and replace it with a Teflon plug. Make sure the black o-ring is in place.
- 3) Label the column (on the outside of the aluminum foil) and the glass sample jar containing the filter wipe using the same ID number (see Section 8.5).
- 4) Place the column in a plastic bag and proceed to Section 8.6.

8.5 Labeling Codes

All precipitation samples should be labeled using the same alphanumeric system.

- The "Site ID" letter for the site
- The "Sample" which will be "P" for precipitation samples
- The "Sample Type", designating either a routine sample (01), a duplicate (02), or a QA sample, field blank or travel blank (FB, TB)
- The "Date" of collection (end date of sample period) in a year-month-day format

An example label and the valid codes are listed below.

Precipitation Sample					
_	_	_	_	_	_
Site	Sample	Samp.Type	Year	Month	Day

<u>Site ID</u>	<u>Sample</u>	<u>Sample Type</u>
U-Brule River	S-Sleeping Bear Dunes	P-Precipitation
C-Champaign	B-Beaver Is.	01- Routine Sample
N-Manitowoc	E-Eagle Harbor	02- Duplicate sample
W-Chiwaukee	T-Sturgeon Point	TB- Trip Blank
V-South Haven	I-Indiana Dunes	FB- Field Blank
M-Muskegon	J-IIT Chicago	
L-Lake Guardian		

Example: SP-02-930119 is the code for a duplicate precipitation sample collected at the Sleeping Bear Dunes site on January 19, 1993. Both the column and the filter wipe should be labeled with this code.

8.6 Column Packaging for Shipment

The columns should be packed in the shipping containers provided by ISWS. Normally supplies for each sampling period will come in these boxes and they can be reused to return the samples. The columns and glass jars should be carefully packed using styrofoam "peanuts" so that the contents do not shift when the package is moved. During the winter (November through April), the box should be clearly labeled "*Do Not Freeze*" so that the shipper does not store the packages outside. During the summer (May to October), three pre-frozen freezer packs (supplied by ISWS) and a reset max/min thermometer should be included in the package.

8.7 Cleaning Collector Surface and Funnel Outlet

Prior to installation of a new column, the collection surface and funnel outlet must be cleaned.

8.7.1 Put on a new pair of gloves.

8.7.2 Place the white plastic bucket under the funnel outlet.

8.7.3 Clean the collector surface by rinsing with 200 mL of pesticide-free methanol (supplied by ISWS) with additional scrubbing with a clean Kimwipe if necessary. Clean the funnel outlet using the test tube brush.

8.7.4 Follow with a rinse of 1 L of tap water from the plastic wash bottle.

8.7.5 Follow with a rinse of 200 mL of DI water from the Teflon wash bottle.

8.7.6 Rinse the funnel outlet fitting and o-ring with methanol and DI water.

8.7.7 Proceed to Section 8.8.

8.8 Installation of a New XAD Column

8.8.1 Remove the aluminum foil to make sure the XAD bed in the column has not separated and is packed between the glass wool plugs. If it has separated, notify ISWS.

- 8.8.2 Replace the aluminum foil and remove the Teflon plug on the bottom (unmarked) of the XAD column and replace it with the column outlet valve. Make sure the black o-ring is in place. Wrap the plug in aluminum foil and put it in a clean plastic bag for reuse when removing the cartridge.
- 8.8.3 Remove the top Teflon plug (marked red) and place it, wrapped in aluminum foil, in the plastic bag. Rinse the funnel outlet fitting with methanol. Screw the top of the column into the funnel outlet fitting. Make sure the black o-ring is in place.
- 8.8.4 Open the collector lid by moistening the rain sensor. Add about 50 mL of DI water to the collection funnel (these steps may not be necessary if rain is falling). Make sure water is flowing from the column outlet valve at the bottom of the column. Adjust the flow to between 10 and 15 mL/min using the column outlet valve. Measure the flow using the small graduated cylinder. Connect the outlet tube to the overflow container. The water level should come to rest between the top of the resin bed and the top of the column.
- 8.8.5 Empty all water from the overflow container and make sure the column is wrapped with aluminum foil.
- 8.9 Waste Disposal Clean-up
- Waste may include materials (water, methanol) and glass fiber filter used to clean the collection surface. Empty any leftover liquid from the Teflon wash bottles into the plastic bucket and seal them in a plastic bag until the next column change. Return the test tube brush with the samples. The water-methanol mixture in the plastic bucket is biodegradable and can be put down the drain.
- 8.10 Sample Shipping
- Once they are properly packaged (Section 8.6), send the samples, Sample Data Sheets, and Weekly Site Visit Sheet to the Principal Investigator. Keep a copy of both Sheets in the site log book. UPS 2nd day delivery is the preferred shipping method. U.S. Priority mail may also be used.

9.0 Quality Assurance Samples

Occasionally the protocol will require collection of quality assurance samples. Travel blanks are columns that are shipped with regular sample columns and stored unopened in the sampler during the collection period. They should be returned to ISWS unopened after the specified period. Field blanks are columns that are connected to the sampler funnel during the sampling period. The switch on the front of the sampler is turned off so that the sampler does not open and no rain passes over the column. Field blanks should include a funnel rinse just like regular samples. Travel blanks are run to assess the amount of sample contamination that occurs during shipment and storage. Field blanks assess overall contamination including shipment, storage, and passive contamination in the sampler during dry periods. These samples should have a "TB" or "FB" in the sample code (Section 8.5).

10.0 Equipment Maintenance and Trouble Shooting

The rain sensor grids are exposed to weather, dust, dirt, and pollutants and must be kept clean to avoid malfunctions. The grids should be cleaned every week by wiping the exposed side with a damp sponge or cloth, using a mild detergent if necessary. If a detergent is used, be sure to wipe off the grid thoroughly to ensure that a detergent film does not build up.

The operation of the sampler should be checked each week. If the cover is not seating properly on either side or if the movement of the cover is not smooth, refer to the trouble-shooting guide below. For more information, contact the manufacturer, MIC Co. 216 Duncan Rd, Richmond Hill, Ontario, Canada, 416-889-6653.

<i>Cause</i>	<i>Remedy</i>
-----	-----
<i>Collector fails to operate</i>	
No power to instrument	Check switches and power source
Blown fuse	Replace fuse
Faulty sensor board	Change sensor board
Faulty PC board	Change PC board
 <i>Motor will not switch off</i>	
Limit switch and or cam	
out of adjustment	Readjust limit switch or cam
Limit switch broken	Replace limit switch
-----	-----
<i>MIC Heater fails to operate</i>	
Heater element burnt out	Change sensor board
Faulty component on PC board	Change PC board
-----	-----
<i>Moving cover drops once it moves over top center</i>	
Loose set-screw on motor sprocket	Tighten set-screw
Chain loose	Tighten chain
 <i>Cover does not return to funnel</i>	
Dirt on sensor board	Clean sensor board
Heater on the sensor not operating	See "Heater fails to operate"

MIC Summary SOP

This summary does not take the place of the detailed SOP and should be used strictly to reinforce the procedure when in the field. Steps 1 and 2 will be conducted weekly; Steps 1 through 7 will be conducted when an XAD-2 sample is required (monthly).

1.0 Initial Equipment Inspection

Upon arrival at the site make an initial inspection of the equipment to determine proper operation for the week. This inspection which will be entered into the site operator's weekly activity sheet would include:

- 1.1 *General Comments* - Comments that might effect the sample collection activity that week.
- 1.2 *Equipment Evaluation* - Determine whether the rain sensor and heater (see Section 6.1 and 6.2) or other mechanical devices are operating properly. Check the Teflon sealing pad.
- 1.3 *Record minimum/maximum temperature and reset thermometer.*

2.0 Overflow Container Measurement for Precipitation Volume

- 2.1 Remove overflow tubing from overflow container. If precipitation is occurring, place overflow tubing into spare overflow container.
- 2.2 Pour the contents of the overflow container into a graduated cylinder. Record each 1 L increment and discard contents of cylinder. Repeat procedure until contents of overflow container are empty. If the column is being changed, add any additional sample in the spare overflow container, reading the final portion to the nearest 10 mL.
- 2.3 Record the total volume estimate on the Weekly Site Visit Sheet. If the container is less than $\frac{3}{4}$ full, indicate an "N" in the appropriate space. If the visit is for removal and replacement of an XAD-column, record the total from that week on the Weekly Site Visit Sheet, and record the total (the summation of any weekly overflow measurement during the four-week sample collection period) on the Sample Data Sheet.

3.0 Rinsing and Cleaning of Precipitation Collection Surface

This procedure occurs only during XAD-2 cartridge removal and replacement (monthly).

- 3.1 Squirt DI water onto the rain sensor to open sampling lid and turn off the power.

- 3.2 Wearing latex gloves (and Kleen Guard coveralls if necessary), remove debris from the collection funnel. Rinse the collection surface with about 200 mL of DI water while scrubbing with a piece of glass fiber filter to remove deposited particles. Allow rinsings to pass over the column until the water level is between top of the column and the top of the resin bed (Figure 1). Close the column outlet valve to maintain water level in column and remove the outlet tubing. If the temperature is very cold, simply dry wipe with the filter.
- 3.3 Place glass fiber filter in sample jar.

4.0 XAD-2 Column Removal and Labeling

- 4.1 Unscrew the XAD-2 column from the collection funnel. Once removed, close the top with a Teflon plug. Make sure black O-ring is in place.
- 4.2 Remove column outlet valve and replace with Teflon plug. Make sure black O-ring is in place.
- 4.3 Place the column, wrapped in aluminum foil, into a plastic sampling bag.
- 4.4 Label cartridge (on the outside the aluminum foil) and sample jar (containing glass fiber filter) with the appropriate sample code (see Section 8.5). Place samples into shipping container for protection.

5.0 XAD Column Packaging for Shipment

- 5.1 Carefully pack the columns in the shipping box with styrofoam “peanuts.” Enclose a reset max/min thermometer in the package and pre-frozen freezer packs (May through October only). During the winter (November through April), label the outside of the package *Do Not Freeze*.”
- 5.2 Ship to ISWS as soon as possible.

6.0 Cleaning Collector Surface and Funnel Outlet

- 6.1 Place new pair of gloves on.
- 6.2 Place the plastic bucket under funnel outlet.
- 6.3 Clean the collector surface by rinsing with 200 mL of pesticide-free methanol.
- 6.4 Follow with rinse of 1 L tap water. Scrub with a clean Kimwipe if necessary and use the test tube brush to clean the funnel outlet.
- 6.5 Follow with 200 mL rinse of DI water. Discard contents of overflow Container #2.
- 6.6 Rinse funnel outlet with methanol.

7.0 Installation of New XAD-2 Column

- 7.1 Remove the Teflon plug from the bottom (unmarked) of the new column and attach the column outlet valve. Make sure black o-rings are in place. Wrap the plug in aluminum foil and put it into plastic bag until the column is removed.
- 7.2 Remove the top plug (marked with red and wrap it with aluminum foil and place it in the plastic bag. Screw the top of the column into the funnel outlet. Make sure the black o-ring is in place.
- 7.3 Open collector lid by moistening rain sensor. Add about 50 mL DI water to the sample collection surface. Open the column outlet valve and adjust the flow to between 10 and 15 mL/min. using the small graduated cylinder to measure the volume. If it is raining, allow the rain to flow through the system. Connect the column outlet to the overflow container using the overflow tubing.
- 7.4 Wrap the XAD-2 column tightly with aluminum foil.
- 7.5 Keep the Teflon plugs in a plastic bag within enclosure for next column removal.

8.0 Waste Disposal/Clean-up

Waste includes water, methanol, glass fiber filter, test tube brush used to clean the collector after the XAD-2 column had been removed. Pour all liquids from wash bottles and bucket into the spare overflow container, cap and dispose of properly. Enclose the DI and methanol wash bottles in a plastic bag, and return the test tube scrub brush in the sample shipment to ISWS. The glass fiber filter, gloves, and other trash can be properly disposed.

9.0 Sample Shipping

Once packaged properly (see Section 8.6 of detailed SOP) send the samples (XAD-2 column and glass fiber filter from Sections 8.3 and 8.4 of detailed SOP), the Weekly Site Visit Sheet, the Sample Data Sheets to ISWS.

Appendix A

SAMPLE DATA SHEET

1. Station Name BRULE RIVER 2. Operator _____

3. Sample Start _____ End _____

Yr Mo Da Time

Yr Mo Da Time

4. Sample Type

Sample Codes

Precipitation

Column UP - -

Total
Vol: _____ L

TSP/TOC

Filter UT -

Filter ID _____

Sampler

Timer End _____

Magnehelic End _____

-

Timer Start _____

Magnehelic Start _____

-

Set-up Date _____, + _____ days

Organics

Filter UH - F-

Filter ID _____

High Volume
Sampler

Cartridge UH - C-

Timer End _____

Magnehelic End _____

-

Timer Start _____

Magnehelic Start _____

-

Dichot Sampler

Codes UD- UD-

Filter IDs: Fine _____ Coarse _____

-

1st Timer end _____ Rotameters _____ (C) _____ (T)
start _____

2nd Timer end _____ Rotameters _____ (C) _____ (T)
start _____

3rd Timer end _____ Rotameters _____ (C) _____ (T)
start _____

4th Timer end _____ Rotameters _____ (C) _____ (T)
start _____

5. Comments on sample condition or site operation:

6. Date Shipped: _____
Yr Mo Da initials

Received: _____
Yr Mo Da initials

Appendix B

WEEKLY SITE VISIT SHEET

INSTRUCTIONS: Fill in all applicable space, enter general weather conditions (sunny, raining, etc.) and approximate values for weather variables. Enter "OK" after OPERATION for each sampler tested if the sampler is operating properly; if there is a problem, enter "X" and describe the problem at the bottom of the page. For the Hi-Vols and Dichots, fill in the TIMER, MAGNEHELIC, or ROTAMETER (Coarse and Total) readings in the appropriate spaces. For the MICs and metals AEROCHEM, enter the temperature inside the sampler and the approximate volume in the overflow container (MIC only). For all samplers, indicate with an "X" whether a sample was collected this week and if the sampler was set up for another run. Indicate with an "OK" whether the wind vane is pointing in the proper direction and whether the anemometer is turning.

SITE _____	DATE _____	TIME _____
WEATHER _____	TEMP _____	WIND DIR _____ WIND SP _____
ORGANICS HIVOL #1	OPERATION _____	TIMER _____ MAGN _____
	Sample: Collected _____ Set up _____	
ORGANICS HIVOL #2	OPERATION _____	TIMER _____ MAGN _____
	Sample: Collected _____ Set up _____	
TSP HIVOL	OPERATION _____	TIMER _____ MAGN _____
	Sample: Collected _____ Set up _____	
DICHOT #1	OPERATION _____	TIMER _____ C _____ T _____
	Sample: Collected _____ Set up _____	
DICHOT #2	OPERATION _____	TIMER _____ C _____ T _____
	Sample: Collected _____ Set up _____	
MIC #1	OPERATION _____	TEMP _____ VOL _____
	Sample: Collected _____ Set up _____	
MIC #2	OPERATION _____	TEMP _____ VOL _____
	Sample: Collected _____ Set up _____	
METALS AEROCHEM	OPERATION _____	TEMP _____
	Sample: Collected _____ Set up _____	
STANDARD AEROCHEM	OPERATION _____	
	Sample: Collected _____ Set up _____	
MET SYSTEM	WIND VANE _____	ANEMOMETER _____
PROBLEMS AND GENERAL OBSERVATIONS:		OPERATOR _____